WILDLIFE

Challenge

How can Fort Carson maintain habitat diversity for native fish and wildlife, while using the land for training and cantonment activities? What can Fort Carson do to help the surrounding community protect the wildlife that inhabits ecosystems surrounding the Installation borders?

Key Considerations

- **Development** – The borders of communities surrounding the Installation continue to expand. Development interrupts the habitation patterns of species vital to a healthy ecosystem.

- **Training** – Use of lands for training can disturb wildlife and impact habitats. Innovative land management and training schedules and rotation can minimize impacts.

- **Nontraining Land Use** – Agricultural and recreational use of lands can impact wildlife. Restricted access, oversight, and educational programs can reduce impacts while raising awareness of conservation efforts.

Importance to Fort Carson

Mission – An ecologically healthy landscape is required for training realism, and wildlife are essential to that landscape. Therefore, wildlife need to be protected in conjunction with conducting the military mission.

Quality of Life – The lives of Fort Carson soldiers, their families, and members of the surrounding community are enriched by the presence of natural areas and wildlife habitats on the Installation. Fish and wildlife species are an important part of many recreational activities at the Installation.

Costs

- The estimated costs for 2002:
  - Surveys and Protection of Mountain Plover: $20,000
  - Law Enforcement: $8,000
  - Recreation: $35,000
  - Educational Programs: $15,000
  - Troop Training: $1,000
  - Swift Fox Research: $86,000
  - Habitat Enhancement, Administrative Support, Listed Species Management Assistance, Land Rehabilitation and Environmental Assessment Support: $224,000
  - **Total: $389,000**

Environment and the Community – While wildlife are protected at Fort Carson and the Piñon Canyon Maneuver Site, wildlife passing through or living in areas outside the Installation property may not be protected. Wildlife cross county, city, and Installation boundaries and require protected corridors to move between supportive ecosystems for food and maintenance of healthy genetic diversity of species. Preserving the wildlife of Fort Carson and the Piñon Canyon Maneuver Site will require cooperation with all stakeholders that manage property adjacent to and near Fort Carson.

Short-term military disturbances do not affect wildlife to the same degree as development and road building. Damage from military maneuvers is normally temporary, and wildlife may use nearby lands during that time. Rotating land areas allows time for land areas to recover. Even while maneuvers are occurring, wildlife often stay safely in the area, and soldiers are trained to be aware of any wildlife in an area. Development alters habitats permanently and creates additional impermeable surfaces, increasing runoff, which increases erosion and sedimentation and adds contaminants and heat to nearby aquatic systems (from runoff across heated surfaces).

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Introduction

Fort Carson and the Piñon Canyon Maneuver Site are blessed with abundant wildlife. As with most military installations, the need to maintain significant acreage for training purposes has provided a measure of protection for the habitats that sustain fish and wildlife. Military activities must be coordinated with protection of species in the cantonment, downrange of Fort Carson, and in the large land area of the Piñon Canyon Maneuver Site. The people who work at the Installation need to be aware that they live and work near wildlife habitat and should be aware of potential animal-people conflicts, including the potential for disease and animal attacks.

Background

Abundant and diverse wildlife species are vital to a healthy, productive environment that supports mankind. The condition of wildlife is a good indicator of the condition of the environment in an area. Because wildlife have the same basic needs as people (clean air, clean water, a place to live, food sources, diverse ecosystems), protecting wildlife protects humanity. Wildlife has important economic benefits; according to the Colorado Division of Wildlife, in 1996, out-of-state hunters and anglers spent $275 million in Colorado (http://www.wilderness.org/newsroom/pdf/co_state.pdf). Furthermore, the existence of diverse wildlife and wildlife habitats on training lands makes training exercises more realistic, providing better trained soldiers.

Fort Carson's wildlife program has four components: education, conservation, recreation, and enforcement. The major activities associated with wildlife issues on and off the Installation are military training and development. Wildlife-related issues include vehicle accidents involving wildlife; management of wildlife species including hunting and fishing; interactions between wildlife and humans in Installation housing and facilities; enforcement of state and federal laws that protect nesting migratory birds and enhance their habitats; monitoring and protection of threatened and endangered species; and education of trainers, schools, and housing residents about diseases such as hanta virus, bubonic plague, and rabies. The Fort Carson wildlife program, which is managed by the Directorate of Environmental Compliance and Management, provides plans to address all issues, cooperates with the Colorado Division of Wildlife, and partners with universities and other interested parties to implement its plans and accomplish its goals. The success of this program is demonstrated by the fact that conflicts between the military mission and wildlife management have occurred only rarely, even though Fort Carson and the Piñon Canyon Maneuver Site are home to several federal- and state-listed species.

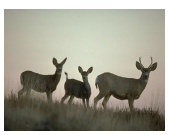
Large training areas, such as those at Fort Carson and the Piñon Canyon Maneuver Site, have become havens for wildlife because military training activities promote a more diverse native habitat. Habitat encroachment by construction of new houses and other types of development on and off the Installation has pushed wildlife onto the less disturbed areas of Fort Carson and the Piñon Canyon Maneuver Site. Land use rotation and military training do not affect wildlife as much as development and agricultural use. Department of Defense (DOD) lands are home to a higher density of federally listed threatened and endangered species than lands owned by any other federal agency (Steve Getlein, Fall 2001 U.S. Army Environmental Center Environmental Update: Preserving Ranges Preserves Natural Legacy).

Regardless of the protection afforded by the Installation, roadways and development block important migration or emigration corridors that provide access to diverse ecosystems. Species that become

geographically isolated may experience restricted genetic diversity. In times of environmental stress, such as drought, fire, or extreme temperatures, wildlife will move to areas more suitable for their survival. As human encroachment pushes more and more wildlife into remaining natural areas, overpopulation of some species and more human-animal conflicts may occur.

The Installation is host to many species of wildlife, including threatened and endangered species. Currently, the black-tailed prairie dog is listed as "warranted, but precluded" and the mountain plover is proposed to be listed as threatened. Army regulations require that proposed species be treated as though they are listed as threatened. Fort Carson and the Piñon Canyon Maneuver Site provide varied habitats for many other less prominent species of macro- and microinvertebrates. Reptiles, birds, and fish species thrive at the Installation. At the last count by Fort Carson's Wildlife Office, Fort Carson hosts 8 reptile species, 104 bird species, and 18 fish species. The Piñon Canyon Maneuver Site has 27 reptile species, over 130 bird species, and 18 fish species. Figure 7.1 identifies the number and types of mammalian species found at each location.

Figure 7.1 – Mammalian Wildlife at Fort Carson, by Order

Mammalian Order	Examples	Number of Species at Piñon Canyon Maneuver Site	Number of Species at Fort Carson
Insectivora 	Desert Shrew	2	1
Chiroptera 	Bat	3	6
Lagomorpha 	Rabbit	3	2
Rodentia 	Chipmunk, Squirrel, Prairie Dog, Mouse, Porcupine	31	24
Carnivora 	Coyote, Fox, Raccoon, Badger, Skunk, Mountain Lion	10	11
Artiodactyla 	Elk, Mule Deer, Pronghorn, Mountain Sheep	5	5

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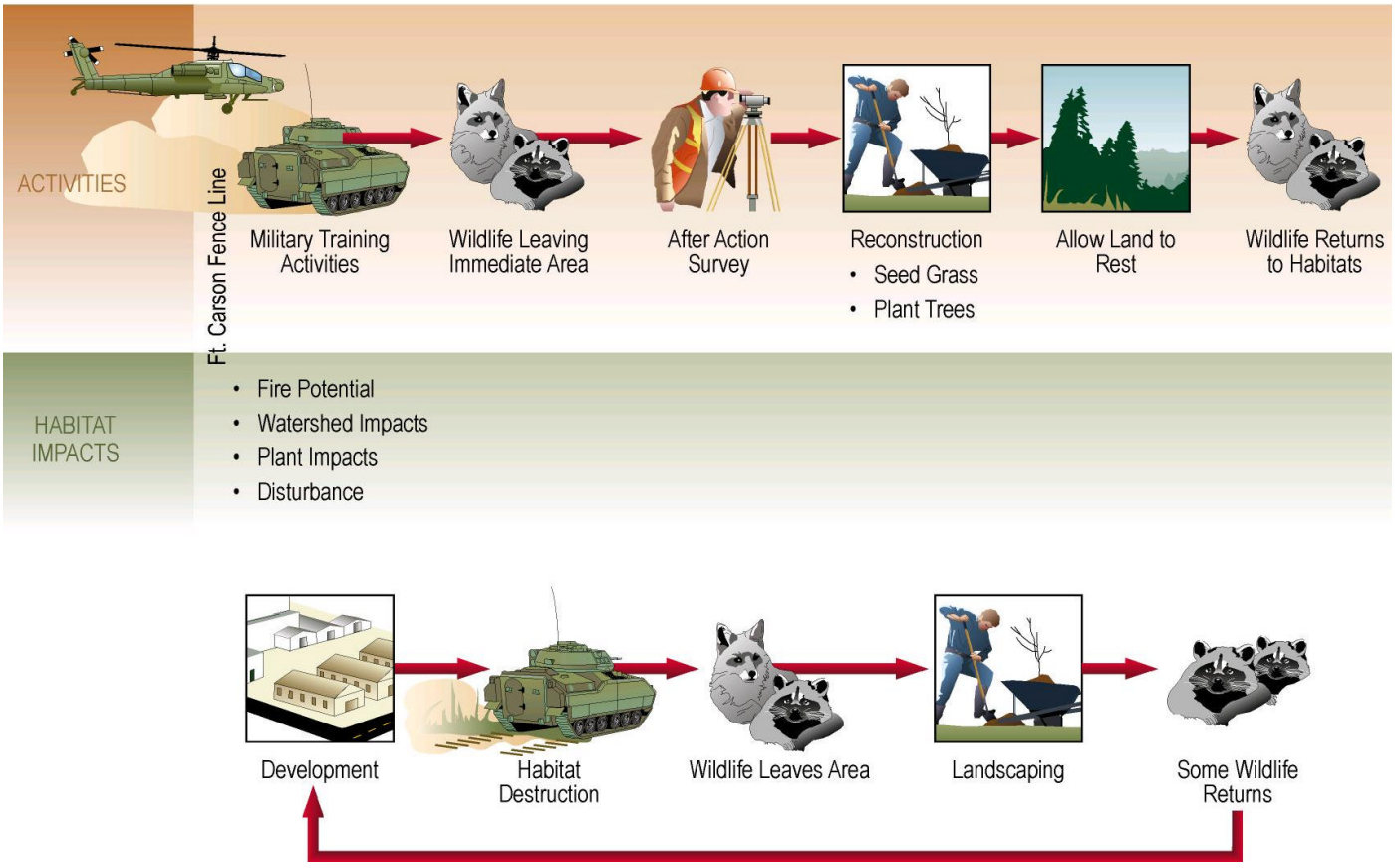
Wildlife species are an integral part of healthy ecosystems, which perform valuable functions such as filtration and storage of water. The loss of even one species could have serious repercussions to the function of an ecosystem. It is important to ensure that no species are lost to extinction.

Biodiversity is key to healthy ecosystems, just as healthy ecosystems support the variety of species that live in them. To sustain wildlife, land must be considered in units based on ecology rather than human-defined geopolitical boundaries. These ecologically based land units should be a combination of larger and smaller systems to ensure that unique sites are preserved and whole systems are maintained.

Activities and Impacts

Training and cantonment activities affect local wildlife (Figure 7.2). Training may force wildlife to temporarily relocate; development may alter habitats permanently. Training is a temporary, rotational activity that allows time for habitats to recover and for wildlife to return. Most of the building sites for the Installation are in place; however, several new buildings are planned.

Figure 7.2 – Wildlife: Activities and Impacts of Training and Development



*Air impacts of activities are detailed in the Air Quality section of this baseline document.
**Not all animals leave areas during training.

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The following sections provide information on four major areas of the Wildlife Program at Fort Carson and the Piñon Canyon Maneuver Site: education, conservation, recreation, and enforcement. These focus areas overlap with each other and with many associated land management programs.

Education

Fort Carson's wildlife education program incorporates training and awareness for soldiers and the civilian communities. The purpose of the wildlife education program is to integrate conservation goals into the Installation's mission and build support within surrounding communities to buttress conservation efforts. To this end, the Installation sponsors several special interest areas and has a well-developed training program for soldiers.

Fort Carson maintains several wildlife education areas, including a wildlife demonstration area, an endangered species area, a conservation area, and several recreation areas. Wildlife education activities include hosting visits from school and youth groups, providing wildlife information to the local media, and working with the creators of the Colorado Wildlife Viewing Guide. Fort Carson has set aside land for threatened and endangered species. These areas are "off-limits" to military training. They include natural wetlands used by school groups and ponds designated for threatened and endangered fish species.

The awareness program for soldiers is built into the Installation's Environmental Training Program. The wildlife component of the program is tailored to instruct soldiers on integrated natural resources management, wildlife management, wildlife recreation programs, nongame species programs, fisheries and aquatic resources, signage, actions to avoid injury to species or habitats, requirements of the Endangered Species Act, the importance of biological diversity, and Army Policy concerning wildlife. This training is conducted four times per year for Environmental Protection Officers, who assist the Directorate of Environmental Compliance and Management with wildlife education and conservation in their organizations.

Conservation

Under the Endangered Species Act, the Army has five primary responsibilities: 1) to conserve endangered species, 2) to not jeopardize endangered species, 3) to consult and confer with the U.S. Fish and Wildlife Service, 4) to evaluate the effects of projects on species and prepare written biological assessments, and 5) to not collect or destroy endangered species. Mission requirements must be accomplished in harmony with the legal mandates of the Endangered Species Act. The Installation Integrated Natural Resources Management Plan ensures compliance with the five primary requirements of the Endangered Species Act.

The Installation Integrated Natural Resources Management Plan outlines a comprehensive program of wildlife conservation, including protection of endangered species and sensitive habitats. The Plan requires monitoring, inventories, habitat management, and wildlife population management and protection. These measures would be meaningless without skilled personnel and funding, which are specified in the Plan. Because Fort Carson and the Piñon Canyon Maneuver Site are managed pursuant to the Plan, appropriate parameters, goals and objectives, provisions for monitoring, management, and progress reporting are in place. This precludes the need to designate areas as "critical habitat."

The Fort Carson Integrated Natural Resources Program, under which the wildlife program is managed, is certified with the Wildlife Habitat Council. Figure 7.3 lists the primary habitat protection measures used at Fort Carson and the Piñon Canyon Maneuver Site. Habitat maintenance and enhancement includes revegetation, fire management, invasive plant species control, water development for wildlife, and aquatic habitat enhancement.

Figure 7.3 – Habitat Protection Measures In Place at Fort Carson and the Piñon Canyon Maneuver Site

Location	Activity	Explanation
Fort Carson	Deferment Program	-Provides time for soil and plants to recover from maneuvers. -Allows time for the plantings of rehabilitation activities to establish.
Fort Carson	Off Limits Areas	-Prohibits mechanized military training in certain areas.
Piñon Canyon Maneuver Site	Training Rest/Rotation System	-Training lands are rested for two growing seasons and then rotated back into use.
Piñon Canyon Maneuver Site	Off Limits Areas	-Prohibits mechanized military training in certain areas.

Recently, lawmakers in the House of Representatives encouraged the Department of Defense (DOD) to use a National Security Waiver provided in the Endangered Species Act. Cited in the explanation was the potential for military training activities to be disrupted because of the presence of a threatened or endangered species. Fort Carson is not, however, using the waiver because it is inconsistent with the goal of providing realistic training. Soldiers deployed to other parts of the world must know how to carry out their mission while respecting native wildlife and wildlife habitats.

Recreation

Recreational uses of wildlife resources, whether for hunting or nonconsumptive uses, allows the public to learn about, appreciate, and enjoy natural resources on military lands. While the military mission has priority over recreational use, and many areas are off-limits to the public, ample acreage is available for hunting, picnicking, bird watching, and hiking. Since the events of September 11, 2001, camping is not allowed at Fort Carson, and only limited camping is allowed at Piñon Canyon Maneuver Site during the big game seasons. Recreational opportunities at Fort Carson create alliances with stakeholders; the public can assist with Installation wildlife goals by providing data on wildlife hunted or viewed.

Permits are required for many activities, and restrictions exist, but the Recreation Center and the Directorate of Plans, Training, and Mobilization Range Control Offices work together to comply with state, federal, local, Army, and Fort Carson regulations. Littering is the primary problem caused by visitors to the Installation.

Providing quality experiences while sustaining ecosystem integrity are key goals of the outdoor recreation programs at Fort Carson. Recreation supports biodiversity at Fort Carson by providing the opportunity for people to understand the value of wildlife. People who value wildlife are more likely to help protect species,

which promotes biodiversity. Hunting programs control populations of certain species and assist with wildlife surveys, which assist biologists in their wildlife management decisions.

Enforcement

The Directorate of Environmental Compliance and Management is responsible for the enforcement of state and federal wildlife laws at Fort Carson and the Piñon Canyon Maneuver Site, with assistance from the Provost Marshal's office. The U.S. Fish and Wildlife Service and the Colorado Division of Wildlife commission wildlife officers. Due to extensive enforcement activities during the 1980s and early 1990s, major transgressions (e.g., poaching) have decreased. However, littering, trespassing, and occasional poaching violations continue. With over 340,000 acres of land and 17 miles of stream to manage, wildlife regulatory enforcement presents a substantial challenge.

The Human Perspective

Wildlife has intrinsic value as a critical component of ecosystems. The beauty and grace of wildlife inspire humans. Basic ethical values can be seen in cultures that care for the wildlife around them. Some wildlife serve as ecological indicators, as demonstrated by the bald eagle's response to DDT in the 1960s. Banned in 1972, DDT was recognized as a human carcinogen after studies that were prompted by decreasing bald eagle populations. Abundant biodiversity is key to the health of the planet's ecosystem. The limits to declining biodiversity are unknown, but decreases in biodiversity generally produce negative impacts.

An emerging field called "biomimicry" is developing and it is producing a greater respect for the many adaptations of animals that promote survival. Biomimicry is an attempt to develop new products and processes based on phenomena in nature. Spider's silk is stronger than Kevlar; mollusks can stick to any surface with a force more powerful than any adhesive created by humans. The military is studying these secrets and others in an effort to mimic the wonderful "inventions" of the animal world. The recognition of this value allows for increased movement toward biodiversity preservation.

Beyond the Pikes Peak Region

Wildlife will inhabit any location where the species can survive. However, wildlife requires stable corridors to enhance genetic diversity, allow access to cover and food, and permit migration. Fort Carson and the Piñon Canyon Maneuver Site provide habitat for migrating wildlife, including waterfowl and other species. As such, the Installation needs clean water and healthy lands to ensure the viability of wildlife that spends most of its existence elsewhere. Monitoring the health of wildlife and associated habitats can provide needed information concerning the Pikes Peak region and beyond.

Chronic Wasting Disease is a fatal illness found in deer and elk. It has been seen in wild and captive animals from Canada to northeastern Colorado. In the same family as Mad Cow Disease, Chronic Wasting Disease causes animals to display abnormal behavior, lose bodily functions, and die. The disease has not yet affected the Pikes Peak region, but its distribution is spreading.

Whirling Disease is found in fish and is caused by a parasite accidentally introduced into Colorado by imported trout in the 1950s. This parasite deforms the spine of fish, causing them to swim in circles and

eventually die. Thirteen of Colorado's 15 major river drainages have been infected with the Whirling Disease parasite. This disease is an example of how introduction of a nonnative species can adversely affect local wildlife.

A balance exists between the care of wildlife and allowing for its survival. Human activities in Colorado may affect species far away and vice versa, as seen in the spread of diseases from wildlife to human populations, such as Bubonic Plague. Properly maintained and balanced ecosystems serve humans and wildlife in the Pikes Peak region and beyond.

Forecast

As areas surrounding Fort Carson continue to develop and push wildlife onto the Installation, habitat crowding and an increased need for wildlife and endangered species refuge are likely to occur. With the potential to use the military exemption of the Endangered Species Act gaining visibility, military lands may not serve as future havens for endangered species. If wildlife survives only on the Installation, genetic diversity within species may be lost.

Despite the requirements of the Installation Integrated Natural Resources Management Plan and the education, conservation, recreation, and enforcement programs, data gaps concerning wildlife at the Installation exist. Historical trends and long-term studies would be beneficial to understanding the impacts of military training on wildlife, the role of fire in wildlife populations, and impacts of development on the wildlife of Fort Carson and the Piñon Canyon Maneuver Site. Furthermore, a central database of all research and survey information concerning wildlife would allow for better analysis in wildlife studies.

Historical Piñon Canyon Maneuver Site data provide a rare opportunity for the Army to understand the effects of military training on wildlife. Most military installations have wildlife data only for decades after military use began. Information is available for the Piñon Canyon Maneuver Site before the military took over the land and shortly thereafter. An evaluation of the effects of 20 years of military training on wildlife would facilitate studies such as a comparison of military use against other land uses (development, grazing, etc.) and could help guide future land use decisions.

Current Sustainability Activities

Agreements with Other Agencies – Fort Carson partners with other scientific and conservation agencies to gain specific expertise or take advantage of cooperative funding opportunities. The partners include:

- U.S. Fish and Wildlife Service
- Bureau of Land Management
- Colorado State University
- Pikes Peak Area Council of Governments
- University of Colorado at Colorado Springs
- Colorado College
- Wildlife Habitat Council
- The Nature Conservancy
- U.S. Geological Survey
- Texas A&M University
- Pikes Peak Community College
- University of Wyoming
- Utah State University
- School District 11
- Partners in Flight
- National Resources Conservation Service

Integrated Training Area Management – Reseeding activities, one part of this program, provide forage and cover for wildlife and habitat sustainability.

Awareness and Education Programs – Fort Carson representatives provide tours; give presentations at area elementary, junior high, and high schools; create videotaped presentations; teach at Pikes Peak Community College; and instruct soldiers on the proper care and sustainability of the land.

Facilitation of Long-Term Studies – Fort Carson has supported a four-year Swift Fox study with Utah State University and a grassland bird survey with Sam Houston State University. The University of Wyoming has conducted surveys on Fort Carson for the prevalence of selenium, which is toxic to wildlife in high levels. Since 1985, the U.S. Geological Survey has conducted sedimentation studies identifying erosion rates of soils with the potential for concentrating selenium.

Funding for Graduate Studies – Fort Carson partnered with the Colorado Air National Guard to assist with graduate research funding to determine the range of the Mexican Spotted Owl, a federally listed threatened species that is only a winter visitor to the Installation.

Elk Home Range Study – In cooperation with the Colorado Division of Wildlife, Fort Carson wildlife personnel attached radio collars to approximately 30 cow elk to determine their home range.

Conservation Easement – Fort Carson is negotiating with a private landowner, The Nature Conservancy, and the U.S. Fish and Wildlife Service to acquire a conservation easement that would conserve, in perpetuity, potential Mountain Plover and Black-tailed Prairie Dog habitat. This initiative would conserve these unique habitats beyond Installation boundaries, and provide protected habitat for other plant and animal species as well.

Mountain Plover Regional Management Plan – The Installation is working with representatives from Chico Basin, Colorado Springs, El Paso County, the state of Colorado, the Natural Resource Conservation Service, and the U.S. Fish and Wildlife Service to develop a regional management plan for the Mountain Plover.

Wildlife Habitat Council Membership – Fort Carson, the only military installation certified by the Wildlife Habitat Council, is an active member of this organization. The Wildlife Habitat Council is a nonprofit, nonlobbying group that helps large landowners manage lands to benefit wildlife in conjunction with the needs of the landowner.

Many other protection measures are in place at Fort Carson. Due to limited space in this document, all of the programs and measures could not be listed.

The Realm of Possibility

To become sustainable, Fort Carson is encouraged to identify and plan for innovations that will support the goals established during the Installation Sustainability Workshop. To do this, participants should be exposed to the concepts and technologies that are within the realm of possibility now and in the future. This

section provides a glimpse of what can be accomplished with existing technology and what can be expected from developing sustainability approaches.

- **Satellite Imagery** – A Canadian group uses satellite imagery to determine the effects of environmental changes on migratory paths and patterns of endangered species. For more information, go to http://www.space.gc.ca/whatsnew/releases/backgr/2001/011009.asp.

- **Habitat Restoration** – Stewart Brand—biologist, former Army officer, and founder of the Whole Earth Catalogue—suggests that a platoon of soldiers can quickly and easily complete extensive habitat restoration work. Incorporating habitat restoration in soldiers' training would assist environmental recovery in war-torn countries and create long-lasting friendships with countries that might otherwise continue to be enemies.

- **Computer Analyses** – Several nongovernment groups have partnered to develop innovative software programs that allow users to assess habitat parameters such as suitability of areas for certain animals, general health of habitats, restoration potential, and data gaps. Availability of this type of analysis may encourage groups such as universities to assist Fort Carson with conservation efforts.

- **Public Education** – Educational centers demonstrate a commitment to the protection of wildlife and teach humans in nearby communities about sensitive habitats and endangered species. They also promote pride in the heritage of natural areas.

- **GIS Technology** – Geographic Information Systems (GIS) may be heavily used for wildlife studies. They enable collection, retrieval, and storage of spatial information; identification of locations within an area that meet specific criteria; analysis of spatial data about biological resources for management decisions; assessment of the impact of actions and alternatives; and measurement of the impacts of management decisions over time.

- **Indigenous Species Planting** – Fort Campbell is replacing nonnative pine species with indigenous hardwood species to restore natural habitats.

- **Wildlife Cloning** – Researchers at the American Museum of Natural History and the Zoological Society of San Diego among other institutions are working to establish DNA banks for endangered animals. The future use of these DNA banks could include "cryopreservation", where the frozen embryo of an endangered species could be implanted into a non-endangered host animal, thus preserving the donor species. Another possibility is nuclear replacement cloning where preserved cell lines for endangered animals could be replicated.

- **Private Lands Initiative** – The Private Lands Initiative (PLI) is a cooperative effort between FORSCOM, The Nature Conservancy, U.S. Fish and Wildlife Service, and private landowners around the borders of an installation. By annexing land around the fenceline and preventing that land from being developed, the PLI creates a "buffer zone" of sorts, allowing for better wildlife habitat around the edge of an installation. With increased habitat for endangered species outside the fenceline comes

decreased training constraints inside the fenceline. The PLI has been active at Fort Bragg since 1995 and is currently reviewing 10,000 to 20,000 acres of prime habitat of the red-cockaded woodpecker.

Fort Carson 25-Year Goals for Wildlife

To be determined by Fort Carson Command and staff, as advised by members of the local and regulatory communities, at the Installation Sustainability Workshop on 4-6 September 2002.